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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,600	08/01/2003	John F. McEntee	10010116-1	4325
22878	7590	08/25/2006	EXAMINER	
AGILENT TECHNOLOGIES INC. INTELLECTUAL PROPERTY ADMINISTRATION, LEGAL DEPT, M/S DU404 P.O. BOX 7599 LOVELAND, CO 80537-0599			MOSS, KERI A	
			ART UNIT	PAPER NUMBER
			1743	
DATE MAILED: 08/25/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/632,600	Applicant(s) MCENTEE ET AL.	
	Examiner Keri A. Moss	Art Unit 1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Amendment filed June 22, 2006 is hereby acknowledged. Claims ¹⁻³⁹~~1-13, 30-36~~
~~and 39~~ are pending.

Election/Restrictions

2. Upon further consideration of the record, including amendment filed 6/22/06, non-elected claims 14-29 and 37-38 are being rejoined.

Response to Amendment

3. Rejection of claims 1-6, 9-11 and 39 under Yoshida has been withdrawn in light of applicant's amendment and arguments.

New grounds of rejection of claim 20 as unclear has been made.

New grounds of rejection of previously reviewed claims under Scheerder (US Pub 2002/0007209 A1), Vernon (USP 3,866,398) and Taylor (USP 3,997,358) have been made in light of applicant's amendment and arguments.

New grounds of rejection of previously non-elected claims under Ronay (USP 5,968,280) and Lin (USP 6,918,397 B2) have been made.

Previous rejections under Dalton (USP 4328,047), Rupe (USP 4,116,851) and Miller (USP 5,418,136) have been maintained in light of applicant's arguments.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 20 recites the limitation "laser-scribed glass" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **1-4 and 9-10** is rejected under 35 U.S.C. 102(b) as being anticipated by Scheerder (US Pub 2002/0007209 A1). Scheerder discloses a method of removing laser debris from a laser-scribed substrate surface, said method comprising contacting the surface with particulate-comprising alkaline fluid and ultrasonically agitating the particulate-comprising fluid in contact with said substrate to remove laser debris from said substrate surface (paragraph 80). It is inherent that the fluid comprises particles in the form of debris that comes off the substrate. The debris particulates are metals as the substrate is made of metal.

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3. Claims **1, 2 and 9** are rejected under 35 U.S.C. 102(b) as being anticipated by Vernon (USP 3,866,398). Vernon teaches a prior art method of removing laser debris from a laser-scribed substrate surface, said method comprising contacting the surface with particulate-comprising water and ultrasonically agitating the particulate-comprising fluid in contact with said substrate to remove laser debris from said substrate surface (column 1 lines 26-30). It is inherent that the fluid comprises particles in the form of debris that comes off the substrate. The particulates are silicon debris as the substrate is made of silicon.

4. Claims **19-20, 22-27 and 39** are rejected under 35 U.S.C. 102(b) as being anticipated by Ronay (USP 5,968,280). Ronay discloses a method of modifying a substrate surface by contacting the surface with a non-acidic fluid such as ethanol (column 4 lines 3-9) comprising synthetic-polymer particulates called polyelectrolytes (column 2 lines 43-60) and ultrasonically agitating the particulate-comprising fluid to modify the substrate surface (column 5 lines 12-29). The particles have a size within the nm range (column 2 lines 24-42) and are used in a concentration of 0.02%-2.0% by weight. The particulates have approximately the same specific gravity as the fluid since Ronay does not teach stirring the composition. The particles are elastic in that each travels towards the substrate, binds to a debris particle on the substrate and then moves away from the substrate in repulsion (column 2 lines 24-42). Ronay teaches that this method is particularly useful with glass in surface preparation for coating and electroplating (column 5 lines 12-39).

5. Claims **19 and 37-38** are rejected under 35 U.S.C. 102(e) as being anticipated by Lin (USP 6,918,397 B2). Lin describes a method well known in the art of modifying a substrate surface comprising immersing a substrate in an organic fluid, allowing synthetic polymer particles to dislodge from the substrate into the fluid, then sonically agitating the fluid, which now comprises synthetic polymers (column 2 lines 16-37). Thus, the substrate is in contact with synthetic polymer-comprising fluid and that fluid is sonically agitated to modify the surface by removing the remaining particles. Lin also discloses a device for carrying out the above method (Fig. 2).

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims **1-2, 4-6, 9-12 and 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor (USP 3,997,358) in view of Vernon (USP 3,866,398).

Taylor discloses an improved method for removing laser slag and debris from the surfaces of laser scribed substrates by tumbling the substrate with particles such as glass or metal beads (column 1 lines 54-68). This method is particularly effective on glass surfaces when used with metal beads (paragraph bridging columns 3-4). Taylor teaches that a washing and rinsing step is needed after tumbling the substrate with the particles (column 2 lines 55-63). The beads are approximately 0.100 -0.110 inches in diameter, or approximately 2500-2800 microns (column2 lines 41-45; column 3 lines 22-

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25). Taylor teaches using 100-200 beads per 6000 die of 500 square microns (column 2 lines 41-45), which is a particulate concentration of 1-3%. The particulate materials, glass and metal, both have elastic properties.

Taylor does not expressly disclose placing the particles in a fluid. Vernon teaches a prior art method of removing laser debris from a laser-scribed substrate surface, said method comprising contacting the surface with water and ultrasonically agitating the fluid in contact with said substrate to remove laser debris from said substrate surface (column 1 lines 26-30).

Taylor's cleaning process involves three steps: tumbling, washing and rinsing, which can be time consuming and inefficient in the already multi-step process of substrate manufacturing. Therefore, it would have been obvious to one of ordinary skill in the art of cleaning substrates to combine the washing step of Vernon with the particulate method of Taylor to gain the advantage of hastening the substrate cleaning process by combining steps and to gain the additional advantage of ensuring complete removal of all of the debris in that one step. Vernon's substrate is made of silicon while Taylor's substrate surfaces are made of metal or glass. To gain the benefit of ensuring that the laser debris will be effectively removed from a variety of substrates, it would have been obvious to one of ordinary skill in the art of cleaning substrates to combine the washing step of Vernon with the particulate method of Taylor.

Taylor does not disclose particles having a size of 15 nm to 500 microns. While Taylor teaches using 1-3% concentration of particles, Taylor does not disclose a volumetric concentration of particles. The size and volumetric concentration of particles

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are result effective variables and it would have been obvious to one of ordinary skill in the art at the time of invention to optimize these result effective variables. Since 1976 and 1977 when the Vernon and Taylor patents issued, commonly used lasers and substrates have become smaller. Therefore, it would have been obvious to one of ordinary skill in the art to use smaller particles (and a finer mesh basket) in order to access the smaller debris produced by the smaller laser commonly used today. In addition, it would have been obvious to one of ordinary skill in the art to maintain a concentration of particles in volume that is similar to or greater than the numeric concentration of particles disclosed by Taylor in order to ensure removal of the debris in the fluid of the combined method.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vernon and Taylor as applied to claim 1 above and further in view of Dalton (USP 4328,047). Vernon and Taylor not disclose the frequency at which the particulate-comprising fluid is agitated. However, it is well known to those of ordinary skill in the art that the typical ultrasonic device agitates at a frequency of 80 kHz (Dalton column 2 lines 34-36). Therefore it would have been obvious to one of ordinary skill in the art to agitate the particulate-comprising fluid at approximately 80 kHz.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vernon and Taylor as applied to claim 1 above, and further in view of Rupe (USP 4,116,851). Vernon and Taylor do not disclose particulates having a specific gravity substantially the

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same as the fluid. It is well known to those of ordinary skill in the art that when insoluble particles have approximately the same specific gravity as the fluid, the particles will remain suspended in the fluid (Rupe column 6 lines 25-34). It would have been obvious to one of ordinary skill in the art to modify either the fluid or the particles so that they would have substantially the same specific gravity to gain the advantage of the particles remaining suspended in the fluid.

10. Claims **1-4, 9-10, 13 and 30-36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (USP 5,418,136) in view of Scheerder, supra. With respect to claims 12-13 and 30-36, Miller discloses a method for producing a biopolymeric array comprising modifying the substrate (column 57 lines 3-7) and producing an array of probes on the modified substrate (column 29 line 28 – column 30 line 8). Miller teaches producing the array on glass (column 4 line 18- column 5 line 9) that is laser-scribed (column 19 lines 3-9), performing a binding assay (column 6 lines 9-22), and reading the biopolymeric array (column 7 lines 44-57). The result of the reading is obtained and transmitted to a remote location (column 8 lines 46-59).

While Miller does not disclose the manner in which the substrate should be modified, Miller teaches that the modification step must remove particles from the substrate (column 57 lines 3-7).

Scheerder provides a method for removing particles from a substrate surface. Scheerder teaches that this method removes contaminants from the surface (paragraph 80). It would have been obvious to one of ordinary skill in the art to combine the Miller

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method of producing a biopolymer array with the Scheerder method for removing particles from a substrate surface in order to remove unwanted particles from the array surface and to gain the additional advantage of removing contaminants that could interfere with the assay results.

11. Claims 1-12, 21, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ronay.

See Ronay *supra*, in which claims 19-20, 22-27 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Ronay. Ronay discloses a method of modifying a substrate surface by contacting the surface with a non-acidic fluid such as ethanol (column 4 lines 3-9) comprising synthetic-polymer particulates called polyelectrolytes (column 2 lines 43-60) and ultrasonically agitating the particulate-comprising fluid to modify the substrate surface (column 5 lines 12-29). The particles have a size within the nm range (column 2 lines 24-42) and are used in a concentration of 0.02%-2.0% by weight. The particulates have approximately the same specific gravity as the fluid since Ronay does not teach stirring the composition. The particles are elastic in that each travels towards the substrate, binds to a debris particle on the substrate and then moves away from the substrate in repulsion (column 2 lines 24-42). Ronay teaches that this method is particularly useful with glass patterned with features in surface preparation for coating and electroplating (column 5 lines 12-39).

The advantage of the Ronay method is that it provides enhanced cleaning and removal of fine particles without causing damage to the surface of the substrate (column

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1 lines 54-62). While Ronay did not specifically teach using the above method of modifying a substrate surface on a laser-scribed glass substrate, Ronay specifically teaches using the above method in surface preparation and on patterned glass and for removing fine particles(column 5 lines 12-39). A laser-scribed glass substrate is a substrate patterned with features that contains fine particle debris. Therefore it would have been obvious to one of ordinary skill in the art to use the Ronay method for removing fine particles of laser debris from a laser-scribed glass substrate in order to gain the advantages of this enhanced cleaning method that does not damage or corrode glass substrate surfaces..

Response to Arguments

12. Applicant's arguments, see Amendment, filed June 22, 2006, with respect to Yoshida have been fully considered and are persuasive. The rejection of claims 1-6, 9-11 and 39 under Yoshida has been withdrawn.

13. Applicant's arguments with respect to claims 7-8, 1-13 and 30-36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAM 8/17/06


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